CREATING A SIMPLE ANTENNA CONTROL INTERFACE

by Antonio Ochoa

Outline

- About me
- Project
- Background
  - Radio astronomy
  - Current interface
  - Stellarium
- Progress
- What I have learned

About Me

- Student at Cal Poly Pomona
- Mathematics and Computer Science double major

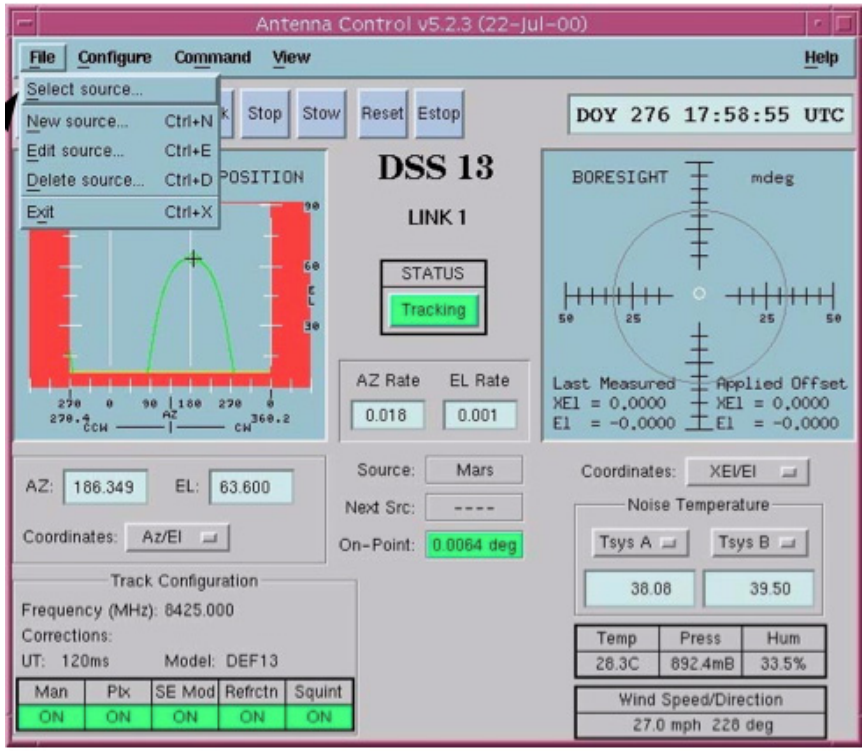
Project

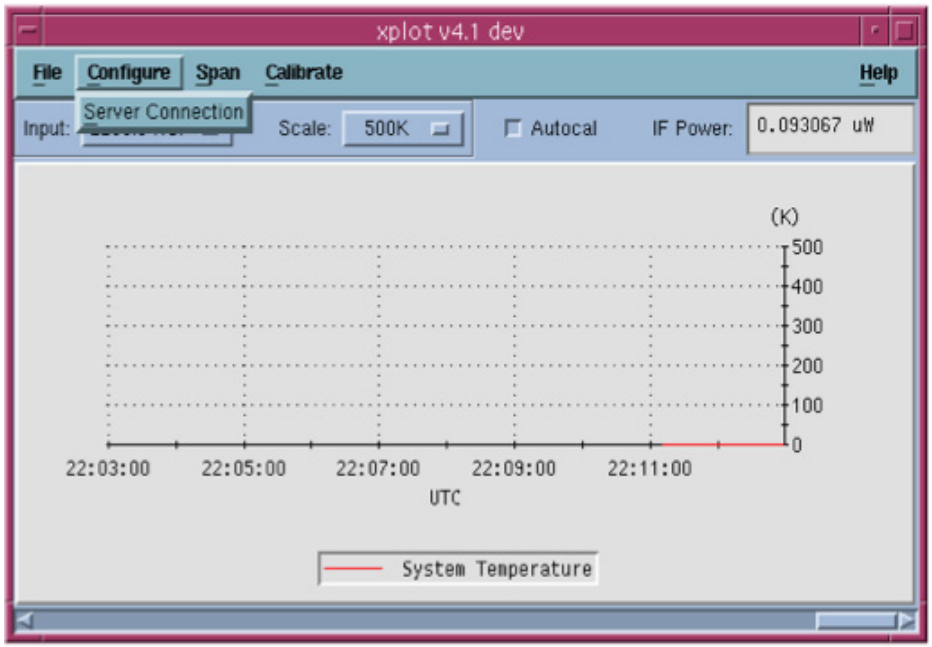
- Context: Make an simple interface for controlling Deep Space Network antennas intended for K-12 education
- Write software to allow Stellarium to send “go to” commands to Deep Space Network antennas
- Develop additional interface
  - Display antenna information
  - Display data received
  - Perform additional antenna controls

What is Radio Astronomy?

- Almost *everything* emits electromagnetic radiation
- Radio astronomy is the study of the electromagnetic energy of extraterrestrial objects at radio frequencies
- This is done using radio telescopes like Deep Space Station – 13 located in Goldstone, California

Current Interface: Xant + XPlot



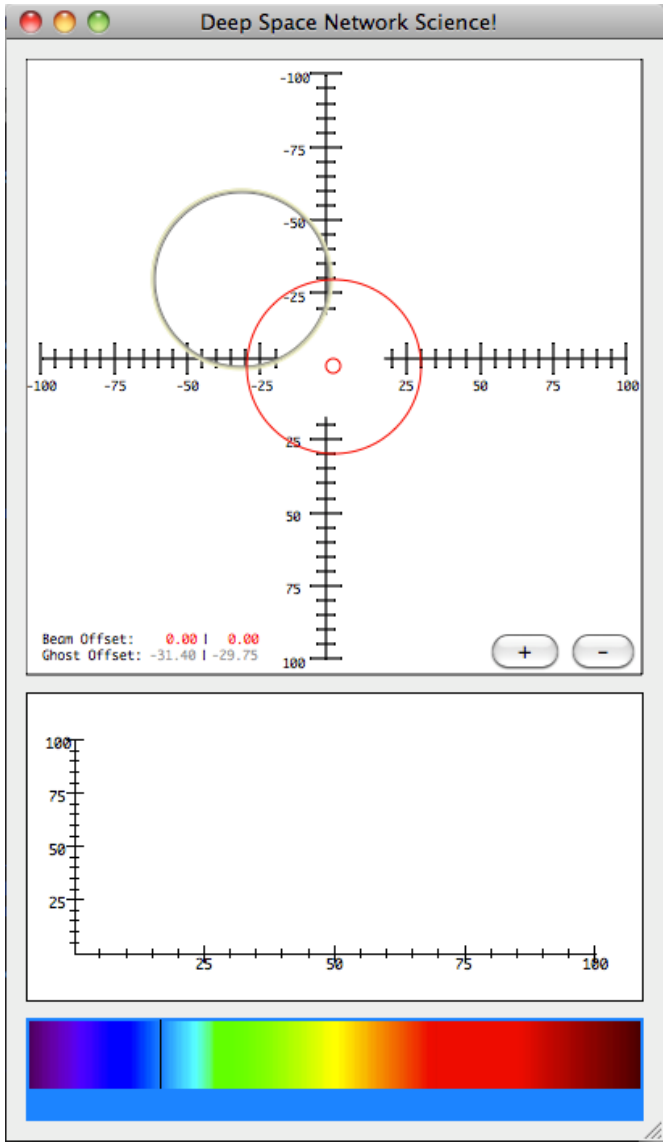


Stellarium

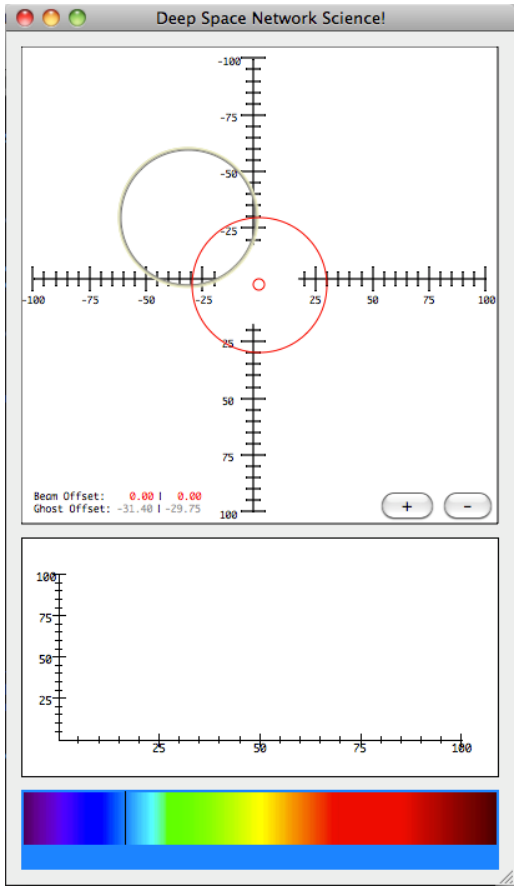
- Open-source planetarium for your desktop
- Virtual sky
- Object selection with appropriate coordinates

Interface Snapshot

- Graphical selection of antenna offsets.
- Display antenna data
- Graphical selection of frequency based on mapping of visible spectrum to radio frequencies
- Work in progress…



Stellarium + Interface



I Learned…

- Python Programming Language:
  - Networking
  - Writing Graphical User Interfaces
  - Capabilities of C Programming Language and Python interactions
- Radio astronomy
- How to appropriately complain about gas prices.

Thank You

- Dr. Thomas Kuiper
- [Supervisor ??]
- Dr. Daisy Sang
- SIRI Program